Report on the

CPA / ALBERTA ENVIRONMENT / ERCB
WASTE MANAGEMENT WORKSHOP

Red Deer Lodge
Red Deer, Alberta
November 21 & 22, 1989

CANADIAN PETROLEUM ASSOCIATION

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PETROLEUM INDUSTRY WASTE MANAGEMENT STRATEGY

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To: Attendees of the CPA / Alberta Environment / ERCB
Waste Management Workshop

Thank you for your contribution at the recent Waste Management Workshop in Red Deer. A summary of the discussions and conclusions of the workshop are contained in this report. Comments on the report should be directed to myself at 269-4351.

On behalf of George Collin, the CPA Waste Management Subcommittee and Joe Selann from David Bromley Engineering, I would like to thank you for your participation in the workshop and for your support and assistance during the first three phases of the CPA's Waste Management Strategy.

Yours truly,

Paul Wotherspoon

Paul Wotherspoon

"Printed on Recycled Paper"

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..0 INTRODUCTION

This report presents a summary of the topics discussed at the Waste Management Workshop. Prior to the workshop, a summary document on "Government Regulations and Philosophies" was distributed. That document, along with other handouts distributed during the workshop, are supplemental to this report and are referenced where necessary.

Sections 2.0 and 3.0 itemize the discussions and the final conclusions developed at the workshop. Section 4.0 represents suggested interim changes to the CPA's Preferred Managment Practices for the disposal of oil industry wastes.

The workshop goal was to reach industry / government concensus on environmentally responsible waste management practices for oilfield wastes in the province of Alberta.

The objectives were to:

- -Define acceptable disposal options which are currently available to the industry.
- -Develop disposal guidelines for each waste type identified by the CPA.
- -Define any interim solutions where further actions are needed to arrive at final guidelines.
- -Develop action plans for resolving outstanding interim decisions and areas for future waste management strategies.

2.0 DISCUSSION COMMENTS

2.1 Reduction, Reuse, Recycling and Recovery

-Alberta Environment preparing to license recyclers and reclaimers. Also bonding reclaimers to ensure that stockpiles can be effectively handled (inventory control). Any facilities that do not have the capacity to handle solids will be shut down.

-Oil field reclaimer operations are usually reviewed by ERCB. Alberta Environment is notified when there may be direct impacts on the environment (ie: incineration, landfarming).

-Central or custom treatment facilities are licensed to treat only oily wastes.

-Further efforts must be made to audit recyclers and reclaimers. Users must know:
- -what the facility is authorized to reclaim;
- -what Clean Air/Water licenses a facility has;
- -what operations the licenses apply to;
- -what volumes the facility can effectively handle;
- -the ultimate destination of the wastes or "product" streams;
- -if the facility operator employs proper treatment methods.

-A major section in Waste Guidelines will be devoted to the 4R's.

-Industry must rely on the government to enforce standards. Although the major oil companies do conduct some audits of waste reclaimers, smaller companies may still go to the lowest cost.

-A forum or communique needs to address related concerns between recyclers, industry and government. A common understanding of each others role must be developed.

2.2 Incineration

-Suggestion made to regulate incinerators based on the mass emitted in the geographic area, not the concentration.

-Concern expressed that incinerator suppliers cannot assure compliance with Alberta regulations. If industry cannot meet present emission standards (refer to handout) the proposed CCME new emission guidelines would be very difficult to meet.

-Alberta Environment suggests that operators receive performance guarantees from suppliers.

-Agreed that industry is not asking for overall approval to incinerate all wastes but want to agree with Alberta Environment

on what wastes may b[illegible] ligible for incineration.

2.3 Landfills

-Industry needs more landfills for landfillabe hazardous waste. Intent is to provide best available disposal options in most geographic locations.

-All landfills are regulated under the Public Health Act. Some landfills also have a Clean Water License which are regulated by Alberta Environment. Landfill definitions:
Sanitary Landfill: The waste is placed in trenches, compacted and covered with earth minimum 3 times per week (usually daily). Population base > 10,000. Usually operated for a single community.
Modified Sanitary Landfill: Less stringent than sanitary. Waste must be covered with earth minimum every 3 months. Population base < 10,000. All permitted sanitary and modified sanitary landfills have been reviewed for hydrogeological concerns. Those classified as Class II under the Public Health Act are approved to receive industrial wastes.
Regional Sanitary Landfills: A sanitary landfill that is operated for a number of communities. If have a Clean Water License, then can also receive solid hazardous wastes (industrial landfill).
Industrial Landfills: A sanitary landfill that is also licensed under the Clean Water Act. Owned by a county, municipality or private industry. Administered by Alberta Environment for Clean Air (if incineration) and Clean Water licenses.
Dry Waste Landfill: Class III. Only non-offensive dry (inert solid) wastes. Can receive only dry industrial wastes.

-Rocky and Lac St. Anne are the only regional sanitary landfills, located outside of cities, that are licensed to accept hazardous industrial waste. Rocky uses daily "cubicles" to reduce the chance of reaction between wastes and causing future problems. In all cases, it is up to the owner of the waste to prove to the landfill operator that the waste is landfillable. It is the waste "owners" responsibility to deal with reputable waste haulers to ensure that wastes are delivered to the proper place.

-Other landfills (refer to workshop handout) do meet the hydrogeological criteria for operating as a Class II landfill. However operators are reluctant to apply for a Class II license because of additional water monitoring requirements and the question of liability.

-The final decision on the acceptability of a waste, regardless of Alberta Environment Restrictions, is made by the landfill operator.

-It is essential to have landfill operators who are knowledgeable of the waste types and regulations.

-The Rocky Mountain Regional Solid Waste Authority prepared and distributed a list of landfill waste disposal parameters and also rated the Overview Report's waste list for landfill disposal:
Will not accept: 3,11,14,20,49,50,57,66,67,68,77,78
May accept with more analytical info: 2,6,7,8,9,19,21,31,41,63,73.
Not enough information to determine: 12,16,18,30,39,41,70,71,72
(Numbers refer to the Waste list in the Overview Report)

-Landfill operators generally agree that wastes having an oil content greater than 3% are not accepted.

2.4 Land Treatment

-Land treatment should not be viewed as an easy option for disposal of oily wastes. Reclamation may be very probable later.

-Land treatment is not a land use practice, it is treatment of a waste by land application, usually by only incorporating the top 15cm active soil layer. It must be thoroughly established that the waste can be "treated" by land application. (ie: only organics, no salts or heavy metals.)

-Land treatment or land farming does not pertain to oil spills. In an oil spill, the "waste" has already been applied and the best option is to usually treat the non-recoverable oil on-site.

2.5 Deep Well Disposal

-There are 1300 disposal wells in the province. The ERCB exclusively regulates wells over 600 m in depth. Shallow wells, < 600m, require Minister of Environment approval and have an in-depth technical review.

-Alberta Environment is concerned that oilfield disposal wells are taking wastes that are not oilfield wastes. (ie: lab wastes; other industry's with lab waste find other disposal methods. Why not petroleum industry?)

-Can hazardous wastes be disposed downhole? Can wastes classified as hazardous under TDG be disposed downhole? If a waste is hazardous at surface, is it hazardous downhole? Alberta Environment will define which wastes can go downhole, including wastes classified as hazardous. In general, the TDGR is not applicable and cannot be used to determine the deep well disposability of wastewaters.

-ASWSA has operational problems with small volumes of certain wastes which operators have included with larger volumes of "regular" wastes received for reclaiming or downhole disposal.

-Alberta Environment believes that wastewater, which can be disposed or treated at surface, should not be considered for

downhole disposal.

-Alberta Environment agrees that if it can be proven that there is no other option for liquid waste disposal, then downhole disposal is viable. But concern must always be given to the long term effect of contaminants.

-The ERCB is receiving increasing numbers of special permit applications for the one-time disposal of wastes originating from non-traditional sources into ERCB regulated disposal wells. These applications are referred to Alberta Environment. For wells shallower than 600 metres there is a more formal procedure for handling one-time applications (well bore and casing integrity are monitored more closely). Delays in the approval process may be in determining if a waste is "oil field originating".

-Alberta Environment will be reducing the number of disposal wells that are currently taking mixed streams. There may also be a change in the present regulations on the volume of wastes that a deep well may accept for disposal. At present, Class B or C plants must deep well dispose all waters (other than surface run-off waters).

2.6 Hazardous Waste Disposal Facility (HWDF)

-No competition to the Swan Hills facility will be authorized. The current Alberta Special Waste Management Corporation policy states that any operation designed to treat hazardous wastes, which can be adequately treated at Swan Hills, will not be authorized.

-However, certain pre-treatment operations, such as dewatering will be considered. The Corporation does not consider disposal as treatment. Some private sector operators have applied to operate facilities which may include more than on-site storage. Some management and/or actual manipulation of the waste may be involved at these facilities. There is a fine line between pre-treatment and treatment of a waste.

2.7 Road Application

-The ERCB must be contacted prior to all applications. The Board will review the volume, location, and composition for parameters such as salts, phenols and halogenated hydrocarbons. No applications will be allowed if waste oil contains light ends (gas condensates). The procedure requires the approval of the local county or municipality. Agreement must also be made on the method of application and how the material will be worked into the road surface.

-An ERCB Task Force is addressing proper road application methods, oily sands, performance standards, who has the responsibility for enforcement and agreements with municipal or county authorities. This is for an interim period only as ERCB is trying to promote other acceptable methods that do promote resource conservation.

-Road application of lube oils is generally restricted because of contaminants. Mixing waste crude oils and waste lubricating oils is not acceptable. Recent surplus of lube oils has required Alberta Environment to allow some road application.

-The ERCB is not in the business to regulate road building. It therefore believes that the oil industry should not be road builders. However, when there are large quantities, proper application methods are usually employed. The smaller applications usually cause problems as the waste oil is applied directly to the road surface thereby becoming susceptible to leaching.

-The ERCB has experienced problems with improper applications by private land owners and on lease roads. However, the ERCB is only responsible for municipal road applications.

-Why can't industry just supply the material to municipalities or highways department? Liability concern.

2.8 Evaporation Ponds

-The terminology "evaporation ponds" is confusing. Evaporation ponds range from clay lined dugouts to lined ponds with synthetic liners and monitoring systems.

-Because of the absence of standards on the construction of evaporation ponds, no consensus was reached on the potential for these facilities for wastewater disposal. A number of these ponds are currently accumulating solids.

-Alberta Environment noted that future evaporation ponds must meet design and construction guidelines for waste stabilization facilites.

2.9 Filters

-3 disposal options currently available:
  -Landfilling after analysis
  -Hazardous Waste Disposal Facility
  -Incineration

-If filters are drained, then can go to landfill. Landfill operator needs to know: the volume and concentration before and after pretreatment (drainage) and the exact draining procedure.

-"Draining" procedures have to be standardized.

2.10 General Comments

-Waste producers must not only decide the treatment method or disposal option (based on whether or not the waste is hazardous); they must also determine why or what made the waste hazardous.

-The industry does not have all the data to adequately prescribe a definitive disposal option for all wastes. Eventually the information may be available, but in the interim, the generalities must be agreed upon and information ("guidelines") must be made available to the industry.

-In most cases, the disposal option will not change but the method of using that disposal option may be upgraded.

-The guidelines:
  - -must thoroughly describe their purpose and how they are to be used.
  - -will not replace any analytical work which may have to be done on a particular waste.
  - -are to be used as a reference document to help a field operator analyse the disposal options available to him based on his knowledge of the waste and the availability of the prescribed disposal options to his operations.
  - -will provide precise definitions of the waste source and its description.
  - -will include standards for each of the disposal options.

-Future technological developments may be available for waste disposal in Alberta. This is either technology that is currently available elsewhere or which has not been developed. Guidelines should only address current available disposal options. Revisions will address new developments. Agreements between parties are also based on "today's" solutions.

-"Agreement" on disposal option by any one government agency is given within the regulatory framework of that agency. Example: ERCB may agree that a waste should be sent to a landfill; but it is then the responsibility of Alberta Public Health or the landfill operator to apply their own regulations. Standard approval procedures must be developed.

-The petroleum industry must rely on the government to regulate the suggested disposal methods (ie: recyclers' operations), and to enforce the regulations on all waste producers.

-Sludges: Most sludges are not found as discreet wastes as listed in the overview report.

-Well workover fluids list must be further refined by CPA.

-The analytical procedures used to classify wastes must be standardized.

3.0 WORKSHOP CONCLUSIONS

Downhole Disposal

Alberta Environment and ERCB will supply defintions on which wastes can be considered for downhole disposal. CPA will participate on the Alberta Environment/ERCB downhole disposal working group.

Road Application

ERCB will be supplying proper procedures for road oiling as part of the current working group. Forestry to be included to develop procedures in the green zone. Committee to also review API criteria for road oiling.

Reduce, Reuse, Recycle, Recover

CPA Waste Managment Guidelines will have a major section addressing the 4 R's.

Reclaimers

ERCB will supply list of reclaimers re type of waste, capacity, end destination of waste products and applicable Clean Air / Water Licenses (referencing what they are allowed to reclaim).

Landfilling

The CPA will examine the need for additional regional landfills based on geographic location. Will gather information on volumes and location of wastes. Through additional discussion with Alberta Environment, ERCB and Public Health, will approach the applicable waste authority.

The CPA will also examine the need to audit (with the consent of the regional waste authority) existing regional sanitary landfills that are currently licensed to receive landfillable hazardous wastes. Intent is to demonstrate the performance and long term liability associated with industrial landfills. Alberta Environment will supply information. (Licenses, groundwater reports.)

Incineration

A CPA / ERCB / Alberta Environment group will immediately develop an action plan to finalize incineration disposal options, techniques, standards, and research requirements.
Agreed that incineration is a yes/no option for each waste type, not as a general option.

Land Treatment

No further action required at this time. Alberta Environment have

supplied specifications.

Filters and Sludges

A CPA / ERCB / Alberta Environment group will immediately develop an action plan for the initial finalization of disposal guidelines (volumes, types, concentrations, analytical method, handling and disposal options).

Regulatory Initiatives

-Review the enforcement of evaporation ponds.
-Review performance of reclaimers and recyclers.
-Regular communication with recyclers and reclaimers and suppliers for provincial strategies on recycle and reuse.
-Regulatory review of landfills and the acceptance of industrial wastes.

Communciation (re Workshop Conclusions)

-IL or GB to be prepared by ERCB.
-Possible news release by Alberta Environment.
-CPA information letter to members regarding interim disposal and handling techniques. (filters, sludges, and pretreatment options.)

0 Interim Changes to Overview Report

The Overview Report (November 1989), distributed to all attendees in advance of the workshop, contained preferred management practices for the disposal of oil industry wastes. In most cases, these practices can be used as "interim disposal guidelines" until the CPA's Waste Management Guidelines are completed in 1990 and/or results are received from the various working groups identified above in Section 3.0.

However, after workshop discussion, some waste management practices were revised. These revisions are summarized below and should be marked in your copy of the Overview Report. A revised "Table 2" is also included.

Waste Name	Revision
Catalyst - Sulphur	Delete Solidification
Contaminated Debris & Soil-Residual Herbicide	Delete Sanitary Regional Landfill Delete Industrial Landfill
Contaminated Debris & Soil-Sulphur	Add On Site Recycle
Filters	Add Pretreatment: Ensure adequate drainage. Separate drained liquid and filters.
Garbage - Domestic Waste	Add On Site Recycle
Waste Ion Exchange Regenerants (Ba Cycle)	Delete Evaporation Ponds (Pretreatment method)
Waste Ion Exchange Regenerants (Demin. Systems)	Add On Site Recycle
Lube Oils (Hydrocarbon)	Add Return to Supplier
Lube Oils (Synthetic)	Delete On Site Recycling, Licensed Reclaimer & Off Site Recycle Add Return to Supplier & HWDF
PCB Contaminated Liquids	Delete Industrial Landfill (only HWDF applicable)
Pesticide Containers	Delete Return to Supplier, Offsite Recycle, Sanitary & Industrial Landfills. Add Pesticide Container Depot
4,65,75 Sludges, Gas Sweetening	Delete Licensed Reclaimer / Recycler Add HWDF, depending on analysis.
Sludge - Flare Pit	Add Road Application, based on salinity.
Wash Fluids - Water	Delete Evaporation Ponds (Pretreatment method)

Preferred Disp[illegible] Practices for Alberta vs. Listed Product[illegible] Wastes

Identification Number	Waste Description	Industrial Landfill	Sanitary Regional Landfill	Evaporation Ponds	Deep Well Disposal	On Site Recycle	H.W.D.F.	Road Oiling	Land Farming	Licensed Reclaimers	Return to Supplier	Incineration	On Site Treatment	Off Site Reuse/Recycle	Solidification	Pretreatment
1	Acid				●	●								●		●
2	Activated Carbon	✸	●				✸		●			●		●		●
3	Batteries	✸	●								●			●		●
4	Blowdown Water			●	●	●										●
5	Caustic				●	●										●
6	Catalyst-Non Sulphur		●								●			●		
7	Catalyst - Sulphur	✸	●								●			●		●
8	Construction Waste		●													
9	Cooling Tower Wood	✸	●				✸					●				
10	Soil - Oil	●							●	●		●				
11	Soil - Mercury	●					✸									
12	Soil - Herbicide						✸		●							
13	Soil - Solvent	✸	●				✸			●		●				
14	Soil - Sulphur	●	●			●			●							●
16	Dessicant		●											●		
17	Scrubber Liquids				●	●				●				●		
18	Used Drum		●								●			●		●
19	Filters - DEA	✸	●									●				●
20	F - DIPA	✸	●									●				●
21	F - MEA	✸	●									●				●
22	F - Glycol	✸	●									●				●
23	F - Lube Oil (HC)	✸	●									●				●
24	F - Lube Oil (Syn)	✸	●									●				●
25	F - Process Water	✸	●									●				●
26	F - Produced Water	✸	●									●				●
27	F - Raw Water		●									●				
28	F - Sulfinol	✸	●									●				●
29	F - Water Inject	✸	●									●				●
30	F - Other	✸	●									●				●
31	Knockout Liq./Sludge					●			●	●		●				
32	FBL - DEA				●	●				●						
33	FBL - MEA				●	●				●			●			
34	FBL - Water Soft				●											●
35	FBL - Water Treat			●	●											●
36	Domestic Waste		●			●						●				
37	H2S Tape						✸									
38	Hydro test fluids				●	●				●				●		
39	Burn Ash	✸	●				✸								●	
40	Insulation		●													●
41	Resin/Regen.		●		●	●										●
42	Iron Sponge	✸	●						●							●

✸ Indicates disposal option to be used when waste classified as hazardous based on analysis.

Preferred Disposal Practices for Alberta vs. Listed Productic Wastes cont'd

Identification Number		Industrial Landfill	Sanitary Regional Landfill	Evaporation Ponds	Deep Well Disposal	On Site Recycle	H.W.D.F.	Road Oiling	Land Farming	Licensed Reclaimers	Return to Supplier	Incineration	On Site Treatment	Off Site Reuse/Recycle	Solidification [2]	Pretreatment [1]
43	Lab/Organic				●		✱									
44	Lab/Inorganic				●		✱									
45	Lube Oil (HC)					●				●	●			●		
46	Lube Oil (Syn)						●				●					
47	Mole Sieve		●											●		●
48	Oily Rags	●	●									●		●		
49	PCB – Liquids						✱									
50	PCB – Solids						✱									
51	Pesticide Containers	✱	●													●
52	Pigging – Liquids					●				●						
53	Pigging – Wax					●				●		●				
54	Process WW				●								●			●
55	Produced Sand							●	●	●				●		●
56	Produced Water				●											
57	Sludge–Cooling Tower	✱	●				✱								●	●
58	S – Separator					●		●	●	●		●				●
59	S – Oil Stock Bottom					●		●	●	●		●				●
60	S – Oil Slop Bottoms					●		●	●	●		●				●
61	S–Closed Drain Bot.								●	●		●				●
62	S–Open Drain Bottoms								●	●		●				●
63	S – DEA System	✱	●				✱					●			●	●
64	S – DIPA System	✱	●				✱					●			●	●
65	S – MEA System	✱	●				✱					●			●	●
66	S – Digestor	✱	●						●			●			●	●
67	S – Backwash Pond	✱	●									●	●		●	●
68	S – Flare Pit	✱	●					●				●			●	●
69	S – Fractionator	✱	●			●				●		●				●
70	S – Glycol	✱	●							●		●				●
71	S – Inlet Separator	✱	●						●							●
72	S – Lime	✱	●													●
73	S–NeutralizationPond	✱	●													●
74	S – Process Pond	✱	●												●	●
75	S – Sulfinol	✱	●				✱					●			●	●
76	S–Sulphur Block Pond	✱	●												●	●
77	S – Treater Bottom	✱	●			●		●		●		●				●
78	S – Water Treatment	✱	●													●
79	S – Other	✱	●												●	●
80	Treater Hay	✱	●						●	●		●				●
81	WF – Solvents				●					●						
82	WF – Water			●									●			●
83	WWF – Acid			●						●						●
84	WWF – HC				●					●						●
85	WWF – Water			●												●

✱ Indicates disposal option to be used when waste classified as hazardous based on analysis.

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"Organizing Resources For Effective Environmental Plans"
#1000, 521 - 3rd Avenue S.W., Calgary, Alberta, Canada T2P 3T3 • (403) 269-4351 • Fax (403) 233-0398

November 17, 1989

CPA / ALBERTA ENVIRONMENT / ERCB
WASTE MANAGEMENT WORKSHOP

Dear Workshop Participant:

This package contains the proposed workshop agenda and summary position papers on the various waste disposal methods. Please be familiar with this material prior to the workshop.

In addition, each participant is requested to review Section 4.0 of the Overview Report and to list either agreement or disagreement with the Preferred Management Practices listed under #6 on each Waste Data Summary Sheet.

EXAMPLE:

Waste No:	Agree	Disagree
1	X	
2		X
3		X

This information will be used to prioritize the time allotted for discussion, in the workshop, of the disposal options. Please hand in your list to myself on Tuesday morning.

Thank you.

Yours truly,

Paul Wotherspoon

Paul Wotherspoon

"Printed on Recycled Paper"

CPA/ALBERTA ENVIRONMENT/ERCB
WASTE MANAGEMENT WORKSHOP
NOVEMBER 21 & 22, 1989
RED DEER LODGE

AGENDA

Dress Code - Casual

Participants arrival November 20, pm

Informal discussions re: definition of waste disposal options

NOVEMBER 21 - DAY ONE

8:00 am to 8:15 am

1) Opening Remarks

- Welcome G. Collin (Chairman)
- Mission/Workshop Objectives
- Introduction of Participants
- Workshop Rules
- Consultant's Role

8:15 am to 8:30 am

2) Provincial Recycle Strategy - B. Taylor

8:30 am to 11:45 am (coffee break 9:30 am to 9:45 am)

3) Disposal Practices Discussion (Section 3 of Overview Report)

- Recycle/Reuse
- Landfill
- Incineration
- Landfarm (Treatment)
- HWDF
- Road Oiling
- Reclaimers

11:45 am to 1:00 pm

Lunch

1:00 pm to 1:30 pm

4) Preferred Disposal Options (Section 4 of Waste Data Summary Sheets)

1:30 pm to 4:30 pm

5) Resolution Process

. Some Disagreement vs Significant Disagreement

. Deal with "Easy Ones" first

. Party(ies) who disagree

- Reason for Concern

-Indicate alternatives/ /pretreatment/procedures

- Discussion by Participants

- Resolve or move to next day

4:30 pm to 5:00 pm

6) Summation (CPA Consultant)

- Procedure for Day 2 - Purpose/Format

NOVEMBER 22 - DAY TWO

8:00 am to ?

Details depending on results of day one.

c:\word\collin\mgmtws.agd

CPA / ALBERTA ENVIRONMENT / ERCB
WASTE MANAGEMENT WORKSHOP

WASTE DISPOSAL OPTIONS
GOVERNMENT REGULATIONS AND PHILOSOPHIES

Attached are government position papers on the following disposal options:

	Page
-Recycling	1
-Incineration	8
-Landfill	10
-Land Treatment	13
-Deep Well Disposal	15
-Hazardous Waste Disposal	16
-Road Application	18
-Evaporation Ponds	23
-On Site Biological Treatment Plants	24
-Licensed Reclaimers	25

WORKSHOP PARTICIPANTS SHOULD BE FAMILIAR WITH THIS INFORMATION PRIOR TO THE COMMENCEMENT OF THE WORKSHOP.

RECYCLING - BRUCE TAYLOR.

Alberta Environment has adopted the "Four-R's" approach to waste management. Thus the strategy of using waste Reduction, Reuse, Recycling and Recovery has guided the development of policies for the management of domestic, commercial and industrial wastes. In keeping with the overall Provincial Government principles of providing public safety, the protection of human health and the protection and conservation of the environment, Alberta Environment has designed a "Two Tiered Approach" and will prioritize and allocate its resources as follows:

1. Ensure proper handling, treatment and disposal of hazardous and special wastes; and

2. Encourage the reduction of wastes and the recycling (including reuse and recovery) of recyclable materials.

The regulatory role of Alberta Environment will be strongly evident in the first tier and legislation such as the Clean Air, Clean Water and Hazardous Chemicals acts will provide the basis for meeting this objective. The development of safe and well-maintained landfills will be a necessary component of this first tier.

By developing facilities like the Swan Hills special waste plant and initiating programs such as our Waste Management Assistance Program for designing safe and well-controlled regional landfills, Alberta has provided a safe endpoint for the life cycle of hazardous materials and chemicals used in the province. Other examples of successful programs include the Pesticide Container Program, the Management of Underground Storage Tanks (MUST) Program and Help Eliminate Landfill Polution (HELP) Program. These programs, and facilities like the Swan Hills plant, deal with those materials which are the most hazardous to human health. We are now in a good position to intensify our efforts in dealing with less hazardous waste materials.

(1)

Since its inception in 1988, the Recycling Branch of Alberta Environment has concentrated on developing strategies for supporting markets for recyclable materials. Areas that have required the greatest amount of attention include: waste tires, waste lubrication oils, newsprint and high grade paper recycling, reduction of packaging, investigation of markets for recycling glass, plastics and whitegoods, and expansion of grant opportunities to municipalities. Initiatives in recycling programs include: the Resource Recovery Grant Program, the Beverage Container Act, Paper Chase Recycling, Alberta Waste Materials Exchange Program, and the Oil Drop Program.

Alberta Environment supports the concept of "cradle to grave management" of waste materials. Accordingly, we are asking industry to become involved in developing both short and long-term solutions for the management of wastes in Alberta. The Recycling Branch is currently developing an Industrial Recycling Program to assist industry in the development of waste minimization (reduction) and recycling programs. Waste minimization has the benefit of reducing waste loads and associated high disposal costs, reducing raw material use and protecting the environment.

LIST OF RECYCLERS

The following is a listing of firms that provide a service which enables producers of wastes to have them recycled rather than disposing of them as waste.

The list is offered as a guide and is not to be construed as being complete. The CPA Member companies should contact the Alberta Special Waste Services Association to determine if there are additional firms providing the desired service.

1. Firms Offering On-Site Recycling Opportunity

Canadian Chemical Reclaiming Ltd.
610 Prairie Meadows Close
Brooks, Alberta
T0J 0J0

The company operates a mobile plant which is taken to gas plant sites to treat glycol and ethanolamine containing wastes to recover the glycol and ethanolamine for use.

2. List of off-site Recycling Firms

Solvent Recyclers

Technisol
Box 1040
Raymond, Alberta
T0K 2S0
Phone: 752-4531 (Shane Hirsche)

Insolco
1301 - 4th Street
Unit #7
P.O. Box 242
Nisku, Alberta
T0C 2G0
Phone: 955-2390 (Jim Andru)

Hi-Tech Solvents
820 Forlee Drive S.E.
Calgary, Alberta
T2A 2E5
Phone: 248-8622 (Ron Kolba)

Safety Kleen Canada Ltd.
3816 - 7th Street S.E.
Calgary, Alberta
T2G 2Y8
Phone: 243-3877 (Mr. Ervin McKeen)

Used Oil Recyclers

Turbo Lubricants, Recycle Oil Services
9830 - 34 Street
Edmonton, Alberta
T6B 2Y5
Phone: 465-1633

Hub Oil Company Limited
5805 - 17 Avenue S.E.
Calgary, Alberta
T2A 0W4
Phone: 248-1900

(See Appendix A)

Canadian Oil Reclaimers (COR Ltd.)
4746 Riverside Drive
Red Deer, Alberta
T4N 2N7
Phone: 275-2515 (Allan Dolen)

Drum Cleaning and Drum Conditioning Recyclers

Newalta Environmental Services Corporation
400, 333 Eleventh Avenue S.W.
Calgary, Alberta
T2R 1L9
Phone: 266-6556 (William E. Berzins)

Alberta Containers Ltd.
3523 64 Avenue, S.E.
Calgary, Alberta
T2C 1N3
Phone: 279-3975 (G. Gray)

Great Western Containers
7815-46 Street, S.E.
Calgary, Alberta
T2C 2Y5
Phone: 279-2191 (N. Bodtker)
Locations: Edmonton, Nisku, Calgary

Battery Recyclers

Industrial Construction Canada Inc.
803-24th Avenue, S.E.
Calgary, Alberta
T2G 1P5
Phone: 233-8920 (Mr. Byron Jacobson)

Wild Rose Recycling
Box 6628
Wetaskiwin, Alberta
T9A 2G3
Phone: 352-4250 (Charles Jackson)

Reignited Battery
8610 Horton Road, S.W.
Calgary, Alberta
T2V 2X2
Phone: 255-3806 (Tom Sampert)

The Battery Man
8610 Horton Road, S.W.
Calgary, Alberta
T2V 2X2
Phone: 252-0435 (Wally Porier)

3. Collection and Disposal of Hazardous Wastes

Chem-Security Ltd.
- Calgary
  1323 - 44th Avenue N.E.
  Calgary, Alberta
  T2E 7A1
  Phone: 250-3742

- Edmonton/Nisku
  P.O. Box 312
  1202 - 8A Street
  Nisku, Alberta
  T0C 2G0
  Phone: 955-9462

- Toll free in Alberta:
  1-800-642-3830

Al-Tec Sanitation Systems Ltd.
Suite 123, 2723 - 37 Avenue N.E.
Calgary, Alberta
Phone: 291-4027 (Mr. Terry Allen)

Custom Environmental Services Ltd.
7722 - 9th Street
Edmonton, Alberta
T6P 1L6
Phone: 440-1825 (Brian Winters)

University of Alberta
Physical Plant
Utilities Division
Chemical Waste Facility
Edmonton, Alberta
T6G 2H1
Phone: 492-2123 (Mr. Stan Ostapowich)

Plastics and Metals

Mayer Metals
9931 - 67 Avenue
Edmonton, Alberta
Phone: 438-5107 (Russel)

Alcop Resource Recycling
416 - 52 Avenue S.W.
Calgary, Alberta
T2V 0A9
Phone: 252-5520

Polymont
Red Deer, Alberta
Phone: 343-8223

Alberta Recoveries
General Delivery
Medicine Hat
T1A 7E4
Phone: 527-7003

Silver Recovery Systems of Canada Ltd.
14511 - 123 Avenue
Edmonton, Alberta
T5L 2Y6
Phone: 451-5454 (Tim Tarangle)

WMJ Metals Ltd.
General Delivery
Falun, Alberta
T0C 1H0
Phone: 586-2846

Kar Basher
North Clover Bar Road
Box 3196
Sherwood Park, Alberta
Phone: 464-6922

Wild Rose Manufacturing
5529 - 100 Street
Edmonton, Alberta
T6H 2H3
Phone: 437-0308

The above solvent recyclers, drum cleaners, battery recyclers, and collectors of hazardous waste are licenced with the exception of Alberta Containers Ltd., Great Western Containers, Industrial Construction Canada Inc. and Wild Rose Recycling.

. . .

These companies have been requested to submit application for a Licence to Operate and have either applied or are in the process of applying for a licence to operate.

The licenced facilities are subject to the applicable sections and requirements of the Clean Water Act, the Clean Water (general) Regulation, the Clean Water (Industrial Plants) Regulation, the Hazardous Chemicals Act, and the Hazardous Waste Regulation.

Conditions stipulated by the licence are the installation of infractures such as impermeable liners, dykes, enclosed storage facilities and piezometers. The licenced operator have provided financial security (bond) to provide funds to cover the cost of accumulated inventory if the business fails. Periodic monitoring and reporting of groundwater quality, material balances, and waste inventories is required by the licence.

0198H

PERFORMANCE REQUIREMENTS FOR WASTE INCINERATION

1. Emission Standards (in stack)

Concentrations are calculated on a dry basis and corrected to 11% O_2 at 25°C and 101.3 kpa.

	Alberta[1]	CCME[2]
Particulates	171 mg/m^3 (>220 kg feed/hr) 513 mg/m^3[3] (<220 kg feed/hr)	20 mg/m^3
Hcl	108 mg/m^3	75 mg/m^3
SO_2	473 mg/m^3	260 mg/m^3
Co	-	57 mg/m^3
PCDD & PCDF (toxic equivalent)	-	0.5 mg/m^3
Opacity	40% (existing unit) 20% (new unit)	5%

Reference 1. "Guidelines for Design and Operation of Refuse Incinerators in Alberta; Alberta Environment, February, 1983.

Reference 2. "National Guidelines for Hazardous Waste Incineration Facilities", Canadian Council of Ministers of the Environment (CCME), October, 1988 (draft), and

Operating and Emission Guidelines for Municipal Solid Waste Incinerators", Canadian Council of Ministers of the Environment, June, 1989.

2. Noise Control

Noise levels associated with a waste incineration facility shall be controlled to comply with local municipal noise by-laws where applicable. Noise levels shall be limited and at least consistent with ambient levels associated with the industrial or local environment where the facilities are to be located.

. . .

3. Ash Management

Ash and other solid residue discharged from a waste incineration facility shall be considered hazardous and be managed as such unless proven otherwise.

Adequate precautions shall be taken to minimize fugitive emissions from the handling and transfer of incinerator ashes. These measures should include the use of closed systems to handle fine dry materials and closed or covered watertight containers for the transfer of residues from the plant to the disposal site.

4. Wastewater Management

The facility should preferably be designed for "zero discharge" for process wastewater. Any discharges to the municpal sewer system shall be treated to meet permitted sewer discharge limits.

Wastewater generated at a waste incineration facility shall undergo on-site treatement prior to discharge.

only on what can accept HW

3 definitions

- Regulate under Public Health Act

Sanitary LF - trench + covered population > 10,
Modified Sanitary LF - less stringent population < 10,000
Dry Waste Site -

RESTRICTIONS ON LANDFILL DISPOSAL

A. The following wastes may not be disposed of into any landfill in Alberta:

1. Liquid or solid hazardous wastes containing tri-, tetra-, and pentachlorophenol in a concentration greater than 1,000 milligrams per kilogram.

2. Liquid or solid hazardous wastes that contain any one or more of the following organic solvents in a concentration greater than 1,000 milligrams per kilogram:

acetone	methanol
benzene	methylene chloride
n-butyl alcohol	methyl ethyl ketone
carbon disulfide	methyl isobutyl ketone
carbon tetrachloride	nitrobenzene
chlorobenzene	2-nitropropane
cresols and cresylic acid	pyridine
cyclohexanone	tetrachloroethylene
ethyl acetate	toluene
ethyl benzene	1,1,1 and 1,1,2-trichloroethane
ethyl ether	trichloroethylene
isobutanol	xylene

3. Liquid hazardous wastes* containing free cyanides in excess of 1,000 milligrams per kilogram.

4. Liquid hazardous wastes or earthen materials including gravel, sand, clay and soil, that contain more than 50 parts per million by weight of polychlorinated biphenyls.

5. Hazardous wastes with a pH less than 2.0.

6. Liquid hazardous wastes containing the following contaminants in an amount equal to or greater than that shown:

arsenic	500 mg/kg	mercury	100 mg/kg
cadmium	100 mg/kg	nickel	134 mg/kg
chromium (Cr^{+6})	500 mg/kg	selenium	100 mg/kg
lead	500 mg/kg	thallium	130 mg/kg

* liquid hazardous waste is a waste which contains liquid that readily separates as a distinct phase when tested by the paint filter liquids test described in the EPA Publication No. SW-846 "Test Methods for Evaluating Solid Wastes - Physical/Chemical Methods".

Industrial LF - licensed by permit from AE

(10)

B. Liquid hazardous waste may not be disposed of in a landfill that is not provided with:

1. two liners of which at least one is a synthetic liner,

2. a leachate collection and removal system,

3. a leak detection system between the two liners, and

4. a ground water monitoring system.

C. The Public Health Act, Waste Management Regulation prohibits the disposal of hazardous waste in modified sanitary landfills or dry waste sites permitted under that Regulation (Section 33(6)). The regulation requires (Section 33(5)) that the Director of Standards and Approvals, Alberta Environment, give approval for the depositing of hazardous waste in sanitary landfills.

D. The following sanitary landfills permitted under the Public Health Act, Waste Management Regulation are also approved under the Hazardous Waste Regulation to receive solid hazardous wastes:

1. East Calgary (Forest Lawn) Sanitary Landfill
c/o City of Calgary
Engineering Sanitation
P.O. Box 2100, Station 'M'
Calgary, Alberta, T2P 2M5
Operator: Fred Johnson (268-5735)

2. Cloverbar Sanitary Landfill
c/o City of Edmonton
Edmonton Water and Sanitation
3rd Floor, West Chambers Building
12220 Stony Plain Road
Edmonton, Alberta, T5N 3Y4
Operator: Bernie Simpson (461-1220)

3. Lac Ste. Anne Regional Sanitary Landfill
c/o County of Lac Ste. Anne
Sangudo, Alberta, T0E 2H0
Operator: Brian Jones (785-3411)

4. Rocky Mountain Regional Sanitary Landfill
Box 550
Rocky Mountain House, Alberta, T0M 1T0
Manager: Dave Emmons (845-7241)

..3

5. Shepard Sanitary Landfill
The City of Calgary
Engineering/Sanitation
P.O. Box 2100, Station 'M'
Calgary, Alberta, T2P 2M5
(277-3650)

E. Sulphur wastes and sulphur contaminated materials may be disposed of at any approved sanitary or industrial landfill provided they are co-disposed with lime or limestone as described in the "Guidelines for the Disposal of Sulphur Containing Solid Wastes", 1983, published by Alberta Environment.

F. Asbestos wastes may be disposed of at any approved sanitary or industrial landfill provided that asbestos waste is buried immediately after delivery to a site.

G. Non-hazardous industrial waste may be deposited at industrial landfills approved under the Clean Water Act. The Public Health Act, Waste Management Regulation allows non-hazardous industrial waste to be deposited at modified and sanitary landfills, permitted under that regulation, subject to the approval of the Director of Standards and Approvals (Section 33 (5)) and subject to the permission of the owner (Section 33 (4)). All modified and sanitary landfills permitted under the Public Health Act, Waste Management Regulation have been approved by the Director of Standards and Approvals to receive non-hazardous industrial waste including sulphur contaminated wastes subject to E above (letter of March 16, 1989, J.C. Lack, Director, Standards and Approvals Division to all Health Units).

H. In decommissioning industrial landfills, the owner/operator may be required to remove the waste and any contaminated soil, if it is determined that the conditions of the site are not compatible with the proposed land use.

LAND TREATMENT

Environmental conditions:

Land treatment (including land spreading, land farming, land application, land disposal and the like) is a waste-specific treatment option which through planned, controlled and managed soil-waste mixing, uses the soil-plant system to degrade, transform and assimilate waste constituents and waste decomposition products. The aim of land treatment is not contaminant dilution, nor a means of transferring contaminants from one medium, such as soil, to another, such as air or water. The practice must not make surface and usable groundwater poorer than background, nor cause soil quality degradation. Land treatment must not result in contaminated soil requiring clean up and reclamation, nor land use restrictions.

Land treatment schemes require approval from Alberta Environment, and are authorized under the Clean Water Act and the Land Surface Conservation and Reclamation Act. Although air quality has not been specifically addressed in past land treatment approvals, the future intent is to do so under the Clean Air Act.

The proponent of a land treatment scheme is responsible to demonstrate that land treatment is feasible with the overall intent of protecting human health and the environment.

The elements of a land treatment feasibility study include the following:

1. Detailed analytical characterization of the waste to identify those constituents most limiting to land treatment, and an assessment of the suitability of the waste for land treatment.

2. Land selection and characterization as to suitability and capability for treatment of the waste. Such evaluation may require prior or concurrent laboratory and pilot field treatability studies.

3. Establishment of per application and accumulative loading rates. Some constituents such as water soluble salts, macro nutrients and heavy metals, will be set, whereas treatability studies may be required for setting rates for organic constituents.

4. Assessment of human health and environmental impact.

5. Assessment of monitoring requirements.

6. Consideration and identification of management requirements.

The 1988, "Guideline for land treatment of industrial waste," is undergoing revision to emphasize the philosophy and process outlined herein.

...MF

Land treatment should be considered in conjunction with other treatment options using similar processes. Examples include composting and the use of bioreactors.

Alberta Environment contact:

Industrial Wastes Branch
5th Floor, Oxbridge Place
9820 - 106 Street
Edmonton, Alberta T5K 2J6

3.5.3 DEEP WELL DISPOSAL ERCB - Gordon Dunn

When ERCB receives an application:

A. Wells deeper than 600 metres:

1. Requires following information:

- analysis of chemical waste
- well to be used for disposal
  - reservior integrity
  - casing integrity
  - finite reservoir capacity
- volume to be disposed of
- "on going" or "one-time" disposal
- fluid compatibility

2. If uncertain as to applicability for deep well disposal:

- have Alberta Environment Waste Management review and comment (will review with Alberta Special Waste Management Corporation).

3. Technical Information to ensure integrity:

- casing checks
- monitoring annulus - inhibited fluid

B. Wells less than 600 metres:

1. All applications are referred to Alberta Environment who compare the requests against a base of groundwater protection map to ensure that all useable aquifers are protected.

2. Any wells disposing of hazardous material must provide two levels of protection for groundwater.

- surface casing cemented to below base of groundwater protection;
- monitoring of inhibited fluid;
- continuous fluid monitoring in the injection well; or
- observation wells into the useable water formation.

C. General Note:

- water that can be disposed of at surface is generally not considered for deep well disposal.
- problems arise from disposal applications for non-oilfield wastes into water disposal wells.

* Biggest Problem - identifying wastes as oil field wastes

#1209
November 14, 1989

Hazardous Waste Disposal in Alberta

Generators of defined Hazardous Waste in Alberta have the options of:

a) on-site treatment or disposal under Clean Air/Clean Water Act permit

b) export to treatment facilities outside Alberta

c) shipment of permitted waste to approved landfills

d) shipment to recycling operations or waste exchange

e) shipment to the Alberta Special Waste Treatment Centre (ASWTC) near Swan Hills

The ASWTC can be accessed through direct pick up and haulage of full truckloads by Chem-Security (Alberta) Ltd., the plant operator . Partial loads can be taken to a system transfer station or commercial broker who will bulk and store the waste for eventual shipment to Swan Hills. Some brokers will also provide transportation, packaging, identification and site clean up services.

The Hazardous Chemicals Act prohibits hazardous wastes from leaving the generator's premises unless the generator, carrier and receiver are properly identified by a "personal identification number" and the wastes are manifested to be delivered to properly licensed and approved facilities. With respect to the use of the ASWTC, the following applies to identification, manifesting, storage and transport of hazardous waste:

A. Identification

The generator must determine if the waste is hazardous and be able to identify the waste for proper determination of treatment and disposal methods. This may entail chemical analysis of the specific wastes and their constituents. When the waste has been tested and approved for shipment to the Treatment Centre, the generator may consign the waste.

B. Manifests

The Hazardous Waste Regulation details the manifest system which must be used with respect to all shipments of hazardous waste in Alberta including those shipments to Transfer Stations, Brokers or the Treatment Centre.

..4/ (16)

C. On-Site Storage Facilities

- o Must be constructed to contain any leakage and prevent it from entering the remainder of the storage site or beyond (including sewers and soil beneath site).
- o All wastes must be adequately labelled.
- o Storage area to be:
  - secured from public entry
  - prominently identified as a hazardous waste storage site
  - equipped with suitable equipment to handle emergency situations
  - provided with operators trained to respond to emergency situations specific to the substances stored.
- o Storage of hazardous waste at unlicenced sites is limited to 1 year or 10 tonnes of waste.

D. Spills and Accidental Discharges of Hazardous Wastes

Immediately on discovery, the responsible person shall take reasonable emergency measures consistent with public safety to repair, remedy and confine the effects of and remove the hazardous waste in such a manner as to provide maximum protection to human health and the environment.

Spills and accidental discharges of hazardous wastes must be reported immediately to the Director of Pollution Control, Alberta Environment.

E. Authorization of Off-Site Hazardous Waste Collection, Storage and Treatment Facilities

Under the Hazardous Chemicals Act, any person or company wishing to operate facilities for the collection, storage or treatment of hazardous waste off the site of generation must be authorized to do so by the Alberta Special Waste Management Corporation. Current Corporation policy is that any operation to treat a waste which can be adequately treated at Swan Hills will not be authorized.

However, certain pretreatment operations such as dewatering will be considered providing they are able to be licenced under the Clean Air/Clean Water Acts.

17 November 1989

ROAD APPLICATION – ERCB Hearing Lib.)

3.2.3 Regulatory Policy

a) Crude Oil

1. Disposal of crude oil wastes to roads must be approved by the appropriate ERCB Field Office. Repeated applications are discouraged.

2. Disposal to municipal roads requires written consent from the local municipality.

3. Factors considered in approval of an application are:

   - amounts of free salt water, fracturing acids, other non-hydrocarbon contaminants in the oily waste
   - halogenated hydrocarbon or phenols in the waste
   - oil must be of relatively high density
   - an analysis of free water content and chlorides
   - identification of any hazardous chemicals
   - estimated total volume
   - weather and seasonal restrictions
   - location of the road to be used for disposal
   - method of application

add comment on green zone

4. Ensuring proper application operations is the responsibility of the company providing the waste material and local authority.

5. Maximum application rate of 40 cubic metres per kilometer, with suggested spreading rates of 12 cubic metres per kilometer per centimeter of loose aggregate. Road width must also be considered.

6. Disposal of oily waste materials onto lease roads is normally not allowed due to site rehabilitation concerns.

7. Disposal on lease roads, private driveways, and parking areas has been considered on a rare basis and will continue to be reviewed on an individual basis.

8. The ERCB discourages road oiling as a disposal practice and encourages development of new technologies to treat and recover hydrocarbons in oily waste materials.

b) Lube Oils

ERCB generally restricts the road application of lube oils because of contaminants contained in it.

Because of recent surplus lube oil supplies Alberta Environment has allowed limited road application based on standards set out in B.C. Permission to apply lube oils to roads is granted by Alberta Environment.

Document 0052S

Date:

Mr.

Dear Mr. :

Re: Road Oiling for Dust Control

Attached for your information is a copy of the Interim Guidelines for the application of used lubrication oil to road surfaces.

Alberta Environment does not encourage the use of used lubrication oils for road oiling or land treatment. Our preference is for a higher order of reuse, namely rerefining. However, we are also aware of the existing over-supply problem throughout the Province and prefer to use this waste oil in a controlled program, as opposed to indiscriminate dumping. Accordingly, Alberta Environment does not intend to regulate against the practice during this calendar year. We do, however, suggest voluntary compliance with the attached guidelines for road oiling. Further review and perhaps inspection of the practice will be conducted during the 1989 season. If it is found at any time that road oiling is causing unacceptable environmental impacts or threats to human health, the practice will be discontinued immediately

It should be noted that the action recommended above is a statement of intention by Alberta Environment, and should not be considered as a blanket conditional approval. Restrictions may apply from other agencies, including Alberta Transportation and Utilities and individual Municipal Governments; these other restrictions will continue to be in place.

(20)

Given that voluntary compliance is effective and the suggested guidelines are sufficient to control environmental and human health concerns, it is possible that Alberta Environment would not interfere with the practice of road oiling in the Province for more than the one year period. It is our hope that recycling initiatives, which we are currently working hard to develop, will create a much higher demand for this precious non-renewable resource in the future. A list of used oil reclaimers and rerefiners is attached.

If you have any questions concerning these guidelines, please call me at 427-5838.

Yours truly,

R. E. Rippon, P. Geol.
Recycling Branch

BR/klp

Attachment

INTERIM GUIDELINES

APPLICATION OF USED LUBRICATION OILS

TO ROAD SURFACES FOR THE

PURPOSE OF DUST CONTROL

Alberta Environment will not object to the practice of road oiling for dust suppression, subject to the following voluntary restrictions:

1. No person shall, without approval, apply waste oil to any land for the purpose of road dust control unless:

   a) The waste oil has the following properties:

Total lead	500 mg/L maximum
PCB	5 mg/L maximum
Flash Point	61°C minimum

   b) The location of the proposed application will be more than 25 m from surface water or a domestic well.

   c) The application rate will not result in a visible runoff of oil beyond the travelled portion of the road or other land.

   d) Permission has been given by the owner of the land to which the oil is applied.

2. Persons engaged in the practice of road oiling should develop contingency plans, including the identification of appropriate equipment and personnel, to deal with any oil spills.

EVAPORATION PONDS

ERCB

1. Major Energy Projects (gas plants, oil sands plants)

   - o ERCB refers applications to Alberta Environment for review and processing of Clean Water Licenses.

2. Flare Pits

   - o No crude oil allowed and 15 cubic metres per month of saltwater.
   - o ERCB is considering elimination of saltwater disposal to pits because of problems with migration to shallow aquifers.

All ponds must meet "Design and Construction of Liners for Municipal Wastewater Stabilization Ponds" Alberta Environment Standards & Approvals Division, Municipal Engineering Branch.

ON SITE BIOLOGICAL TREATMENT PLANTS

Environmental conditions:

Effluent discharge from biological treatment plants must meet the requirements outlined under the licence, issued under the Clean Water Act, to operate the facility. Effluent discharge through land irrigation is a possible option (refer to land treatment environmental conditions) providing wastewater, soil and climatic requirements are met. Wastewater treatment sludge disposal options include landfilling, incineration, and land treatment, providing the environmental conditions for those options are met.

3.10 Licensed Reclaimers

3.10.3 Regulatory Requirements

Oilfield reclaimers are licensed under Sections 7.001 - 7.003 of the Oil and Gas Conservation Regulations. These facilities can be approved to handle oilfield waste products such as tank bottoms, treater bottoms, oil spill debris, well workover fluids, pit cleanings and sludges. Reclaimed oil is sold and liquids are normally disposed of through deep disposal wells.

Reclaimers may also handle non-oilfield wastes. Collection, storage, and processing of these wastes must be approved and licensed by Alberta Environment.

A major limitation faced by reclaimer facilities is the need to dispose of sludge-type wastes generated from their own process. These solid wastes are to be adequately contained on site and the reclaimer is to have an approved disposal method (ie. land filling or land farming) in place. Road oiling is another alternative but is not encouraged by the ERCB.

Incineration is another alternative method to dispose of oily solid wastes handled by reclaimer facilities, however the number of presently approved incinerators is very limited.

Alberta Environment approval is required if incineration (ie. Clean Air Licence) or land treatment methods such as landfilling/farming (ie. Clean Water Licence) are utilized for reclaimer waste disposal.